



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,829	11/20/2003	Daniel Bolliger	ESEC-P220US	2981

7590 09/22/2006

David B. Ritchie
Thelen Reid & Priest LLP
P.O. Box 640640
San Jose, CA 95164-0640

EXAMINER

GREENHUT, CHARLES N

ART UNIT	PAPER NUMBER
----------	--------------

3652

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/719,829	Applicant(s) BOLLIGER ET AL.	
	Examiner Charles N. Greenhut	Art Unit 3652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 21-40 is/are rejected:
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

I. Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, z_0 being less than an average height of the chips of claims 24 & 34 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

II. Claim Rejections - 35 USC § 112

The following is a quotation from the relevant paragraphs of 35 U.S.C. 112:

(2) The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 24-25, 29-30, 34-35, 39-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

1.1. Claims 24 & 34 appear to be misworded. The position z_0 can not be less than an average height of the surface of the chips and agree with the limitation in parent claim 21 that the bondhead is lowered to that position. This limitation also does not agree with the specification which never shows z_0 less than z_m (See e.g., Fig. 5-7). Examiner assumes applicant is attempting to claim the situation where the bondhead lowers such that the gripper contacts the chip without having to raise the needle, i.e., while the chip is on the foil. Note however, this sequence is not shown in the drawings and the drawings must show every feature of the invention specified in the claims as discussed above.

III. Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim(s) 21-25 and 31-35 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over MIMATA (US 6,505,397 B1) in view of LEU (US 6,648,215 B2).

1.1. With respect to claim 21-23, and 31-33, MIMATA (Fig. 1a-d) shows the pickup mechanism with chip gripper (25) movable (cf. Fig. 1a-1b) in the z direction relative to a bondhead (21) movable in z, detaching the chip (1) from the foil (6) with a needle

(12). MIMATA discloses raising the chip (1) against the holder (25) so that the holder is moved upward while the bondhead remains in position (cf. Fig. 1a-1b). MIMATA fails to disclose the pneumatic damping arrangement as claimed. MIMATA, instead, uses a spring (27) to control the amount of compressive force that is applied to the chip (1) during this step and discusses selecting the spring such that the force applied to the chip is not excessive (Col. 1 Li. 1-3). LEU teaches a bondhead having a pneumatically controlled piston arrangement (Fig. 4 embodiment) where the chip gripper (2) is connected to a piston bearing pneumatically on the bondhead (via chamber 12), z movement controlled by a pressure differential or vacuum (Col. 4 Li. 43 et seq.). It is well known that a pneumatic dampening arrangement may be substituted for a spring dampening arrangement. It would have been obvious to one of ordinary skill in the art to modify MIMATA with a pneumatic dampening arrangement in order to achieve greater control, e.g., by means of feedback and/or variation, over the dampening constant of the gripper, thereby enabling accurate application of the desired compressive force on the chip as required by the application.

- 1.2. As best understood by examiner, claims 24-25 and 34-35 are directed to the situation where the gripper makes contact with the chip either before the needle is moved upward or absent the aid of the needle, accounting for either an accidental overshoot or direct picking off the foil, respectively. The MIMATA device would not be capable of this operation because instead of employing a vacuum suction device to hold the chip to the gripper, a pair of lever arms (32a/b) which hang below the chip

are employed. These arms (32a/b) prevent the gripper from interfacing with a chip in an unelevated condition, e.g., directly on the foil. The bondhead of LEU, instead employs a vacuum gripper technique (Fig. 4) thereby enabling direct interface with such a surface, and also accounting for overshoot of the bondhead (3) in order to prevent excessive pressure on the chip (1). It would have been obvious to one of ordinary skill in the art to modify MIMATA with the bondhead of LEU in order to interface directly with a planar surface.

2. Claim(s) 26-30, and 36-40 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over MIMATA in view of LEU and further in view of KOBAYASHI (US 5,351,872 A).

2.1. With respect to claims 26-30, and 36-40, MIMATA fails to teach the measuring and updating step. KOBAYASHI teaches the z position of gripper is measured and the z_0 position is updated (Col. 6 Li. 50 et seq.). It would have been obvious to one of ordinary skill in the art to modify MIMATA in view of LEU with the measuring and updating step of KOBAYASHI in order to adjust for variation in the chip surface or gripper locations that could possibly lead to improper picking.

IV. Response To Applicant's Arguments

Applicant's arguments entered 7/5/06 have been fully considered.

1. Applicant argues that KOBAYASHI does not anticipate new claims 21 & 31 because KOBAYASHI fails to disclose the claimed pneumatic arrangement. Examiner never asserted that KOBAYASHI disclosed the pneumatic arrangement as claimed so this argument is not ripe for discussion and is, therefore, not addressed herein.

2. Applicant argues that KOBAYASHI does not anticipate new claims 21 and 31 because KOBAYASHI fails to disclose the bondhead remaining at its position while the needles are pushed up. This argument is persuasive. This feature is, however, taught by MIMATA as discussed above.
3. Applicant argues that LEU does not render claims 21 and 31 obvious because LEU is concerned with the problems of placing the chip as opposed to picking the chip. This argument is not persuasive. While it is true that LEU does describe placing the chip as opposed to picking it, the underlying problem that LEU addresses by the implementation of the pneumatic arrangement is exactly the same; controlling the amount of compressive force applied to a chip suspended from a bondhead when an upward force is applied to that chip. While LEU does not detail how the chip is picked to the bondhead, it would be obvious to use the needle method as described by MIMATA and admitted by applicant as standard practice in the art. When that needle method is combined with the bondhead of LEU, the result is the ability to control the compressive force on the chip during picking. The LEU bondhead would achieve this whether the upward force is applied by a needle, during the picking step, or by the substrate and adhesive during the placing step.

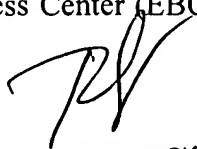
V. Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
2. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS

of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles N. Greenhut whose telephone number is (571) 272-1517. The examiner can normally be reached on 7:30am - 4:00pm EST.
5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen D. Lillis can be reached on (571) 272-6928. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.
6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CG


PATRICK MACKEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600